A-8780

ONKY -00871

REF. NO. 3376

ONKYO® SERVICE MANUAL

Integrated Stereo Amplifier
MODEL A-8780

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO
AUDIO COMPONENTS

871

SPECIFICATIONS

Power Output:	105 watts per channel, min. RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.008% Total harmonic distortion.	
Dynamic Power:	305 watts 2 ohms, 240 watts 4 ohms	
Total Harmonic Distortion:	0.008% at rated power 0.008% at 1 watt output	
Intermodulation Distortion:	0.005% at rated power	
Damping Factor:	150 at 8 ohms (1 kHz)	
Input Sensitivity/ Impedance:	Phono (MM):	2.5 mV/50 kohms
	Phono (MC):	160 μV/130 ohms
	CD:	150 mV/30 kohms
	TUNER:	150 mV/30 kohms
	Tape Play:	150 mV/30 kohms
Output Level/Impedance:	Tape Rec:	150 mV/1.0 kohms (Phono)
Phono Overload:	Phono (MM):	200 mV RMS. at 1 kHz, 0.012% THD.
Tone Control (Vol −20 dB):	BASS:	±8 dB at 100 Hz
	TREBLE:	±8 dB at 10 kHz
High Cut:	6 kHz (6 dB/Octave) (TREBLE min.)	
Frequency Response:	CD, Tuner:	2 Hz – 50 kHz (+0, −1 dB)
RIAA Deviation:	Phono (MM):	±0.3 dB, 20 Hz – 20 kHz
Subsonic Filter (MM SUBSONIC, MC SUBSONIC):	20Hz (−3dB, 6dB/Oct)	
Signal to Noise Ratio (IHF-A):	Phono (MM):	94 dB (5.0 mV input)
	Phono (MC):	75 dB (0.5 mV input)
	CD (DIRECT):	107 dB
Muting:	−20 dB, −∞	
Power Supply:	AC220V, 50Hz	
Dimensions (W × H × D):	435 × 157 × 391 mm 17-1/8" × 6-3/16" × 15-3/8"	
Weight:	14.1 kg, 31.1 lbs.	

Specifications and features are subject to change without notice.

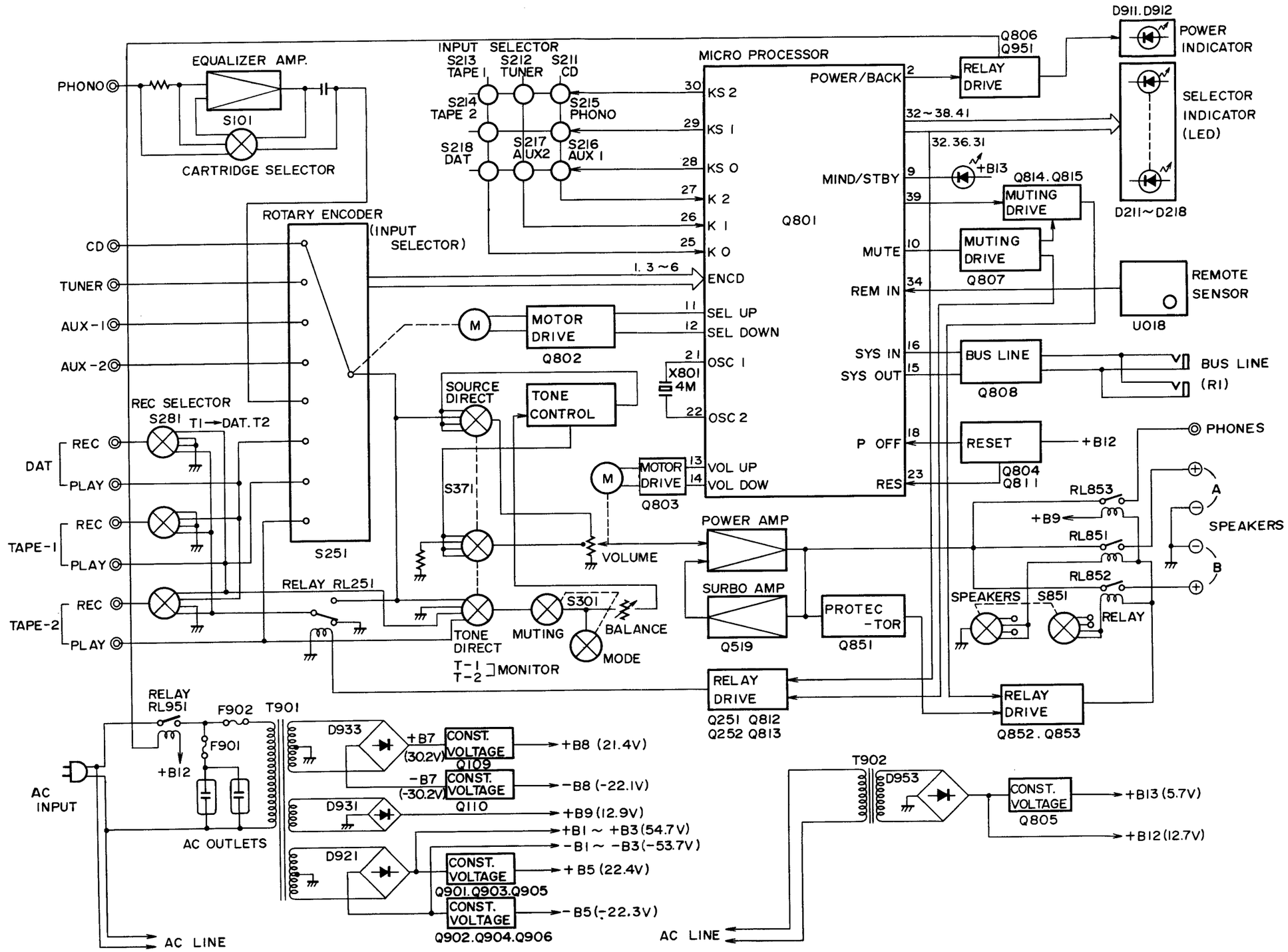
PRECAUTIONS

1. Replacing the fuses

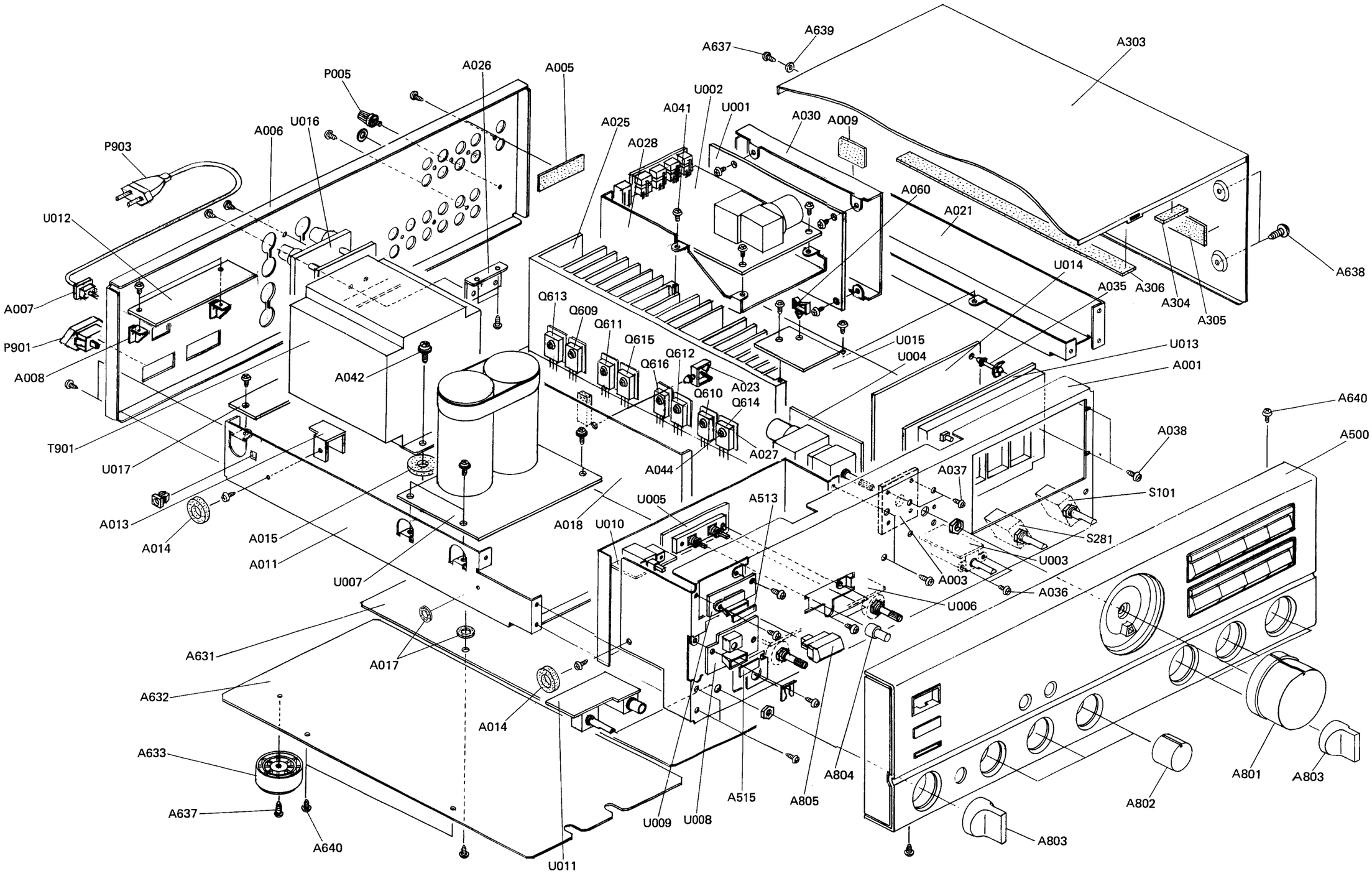
For continued protection against risk fire, replace only with same type and same rating fuse.

CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252075 or	2.5A-SE-EAK or
	252075CC	2.5A-SE-EAK,Primary fuse
F902	252077 or	4A-SE-EAK or
	252077CC	4A-SE-EAK,Primary fuse

BLOCK DIAGRAM



CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
A001	27110533C	FRONT BRACKET
A003	27270321A	SPACER(VOL)
A005	28140859	CUSHION 20×60×1.5T
A006	27121356-2	BACK PANEL
A007	27300750	BUSHING(CORD)
A008	27140881	BRACKET(S)
A009	28140859	CUSHION 20×60×1.5T
A011	27130579-1D	BRACKET ASS'Y(L)
A013	27141353	BRACKET (U)
A014	27175011C	LEG
A015	27270213	SPACER(PT)
A016	27190607	HOLDER KGLS-16S,(U007)
A017	27270212	SPACER
A018	27150278-1A	SHIELD PLATE
A021	27130592-1B	BRACKET ASS'Y(R)
A023	27190807	HOLDER VSC-10
A025	27160259	HEATSINK
A026	27141334	BRACKET (H)
A027	27301328	RADIATION SHEET
A028	27130617A	BRACKET (S)
A030	27130595B	BRACKET (EQ)
A035	27190480	HOLDER KGLS-8S
A036	82143006	PAN-HEAD SCREW 3P +6FN BC
A037	83843088	TAP-TIGHT SCREW 3TTB+8BBC
A038	833430080	TAP-TIGHT SCREW 3TTP+8PBC
A041	831130088	TAP-TIGHT SCREW 3TTW+8B
A042	830440109	TAP-TIGHT SCREW 4TTC+1OCB
A044	801217	SCREW W/WASHER 8W3P +12F
A060	27190808	HOLDER MSC-1613
A303	28184441B	TOP COVER
A304	28140020	CUSHION 10×40×4T
A305	28140695	CUSHION 25×240 ×1.5T, (BOTTOM BOARD)
A306	28140972	CUSHION 25×140 ×1.5T, (BOTTOM BOARD)
A500	1A231121	FRONT PANEL ASS'Y
(A503)	28125204	END CAP(L)
(A504)	28125205	END CAP(R)
(A506)	27265182A	COSMETIC RING(VOL)
(A507)	27265185	COSMETIC RING(TONE)
(A508)	27265186	COSMETIC RING(SP)
(A510)	27267608	GUIDE(PUSH)
(A511)	27267569A	GUIDE(POW)
(A512)	28198695	FACET(POW)
(A514)	28198719	FACET(MUT)
(A517)	28191539	CLEAR PLATE
(A520)	28324040	KNOB AS(SEL)
A513	28199174	FILM
A515	28119181	FILM
A631	27170269	BOTTOM BOARD(L)
A632	27170270	BOTTOM BOARD(S)
A633	27175153-1	LEG
A634	28141024	CUSHION 20×240 ×3.0T, (BOTTOM BOARD)
A637	834430088	TAP-TIGHT SCREW 3TTS+8BBC
A638	838440108	TAP-TIGHT SCREW 4TTB+1OBBC
A639	800529	BUSHING(PC)
A640	801230	TAPPING SCREW 3STS+8BQBC
A801	28323760	KNOB(VOL)
A802	28323549	KNOB(TONE)
A803	28323762	KNOB(SP)
A804	28323545-1	KNOB(PA)
A805	28324041	KNOB AS(POW)
⚠F901	252075 OR	FUSE 2.5A-SE-EAK OR
	252075CC	FUSE 2.5A-SE-EAK
⚠F902	252077 OR	FUSE 4A-SE-EAK OR
	252077CC	FUSE 4A-SE-EAK
P005	25060044	TERMINAL(GROUND)

REF.NO.	PART NO.	DESCRIPTION
⚠P901,P902	25050337	AC OUTLET NSCT-2P164
⚠P903	253148	AC CORD AS-CEE OR
	253150	AC CORD AS-CEE
Q609,Q610	2201703 OR	2SC3855-O OR
Q613,Q614	2201706 OR	2SC3855-P OR
	2201704	2SC3855-Y
Q611,Q612	2201693 OR	2SA1491-O OR
Q615,Q616	2201696 OR	2SA1491-P OR
	2201694	2SA1491-Y
S101	25030312A	SWITCH NRSF-104-25BU
S281	25030328	SWITCH NRSF-104-20BU
⚠T901	2300558B	NPT-1073G
U001	1A231501-1A	NAAF-3901-1A PHONO EQUALIZER CIRCUIT PC BOARD ASS'Y
U002	1A231502-1A	NASW-3902-1A ROTARY ENCODER CIRCUIT PC BOARD ASS'Y
U003	1A230503-1	NASW-3903-1 DIRECT SWITCH PC BOARD ASS'Y
U004	1A230504-1	NAAF-3904-1 VOLUME CONTROL PC BOARD ASS'Y
U005	1A230505-1	NASW-3905-1 MUTING/ MODE SWITCH PC BOARD ASS'Y
U006	1A230506-1	NAAF-3906-1 TONE CONTROL CIRCUIT PC BOARD ASS'Y
U007	1A230507-1	NAPS-3907-1 POWER SUPPLY CIRCUIT PC BOARD ASS'Y(I)
U008	1A230508-1	NADIS-3908-1 REMOTE CONTROL SENSOR PC BOARD ASS'Y
U009	1A230509-1	NADIS-3909-1 STAND-BY LED PC BOARD ASS'Y
U010	1A230510-1	NASW-3910-1 STAND-BY SWITCH PC BOARD ASS'Y
U011	1A230511-1	NASW-3911-1 SPEAKER SWITCH PC BOARD ASS'Y
U012	1A230512-1A	NAETC-3912-1A POWER SWITCH CIRCUIT PC BOARD ASS'Y
U013	1A230513-1	NASW-3913-1 INPUT SELECTOR KEY PC BOARD ASS'Y
U014	1A230514-1A	NAAF-3914-1A MICRO PROCESSOR CIRCUIT PC BOARD ASS'Y
U015	1A231515-1A	NAAF-3915-1A AMPLIFIER CIRCUIT PC BOARD ASS'Y
U016	1A230516-1	NAETC-3916-1 SPEAKER TERMIBAL PC BOARD ASS'Y
U017	1A230517-1A	NAETC-3917-1A POWER SUPPLY PC BOARD ASS'Y(II)

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

ADJUSTMENT PROCEDURES

Adjustments and Checking the Protection Circuitry

1. Preparations

1) Place the unit on the workbench. (There should be about 15 mm of space between the base plate of the unit and the work surface.)
2) Set up the unit as follows.
   (1) No load
   (2) No signal
   (3) Volume turned all the way down
   (4) Speaker switch OFF
   (5) Power switch OFF

Note) Check the following points before making adjustments
   (1) The power switch should be OFF.
   (2) The interior of the unit should not be warm.

2. Idling current adjustment

1) Turn the power switch ON and allow the unit to warm up for about 10 minutes.
   (1) Adjust R535 (R536) so that the voltage at test point VCT-IID on the NAAF-3915 circuit board is 15mV±5mV.

   Note) Semi-fixed resistors enclosed in parentheses ( ) are for the right channel.

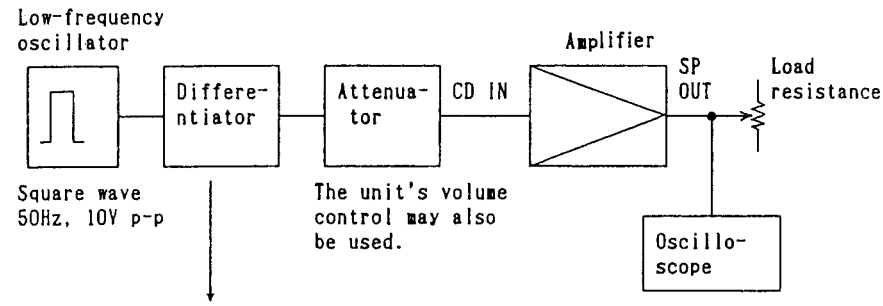
3. Check of operation of protection circuitry

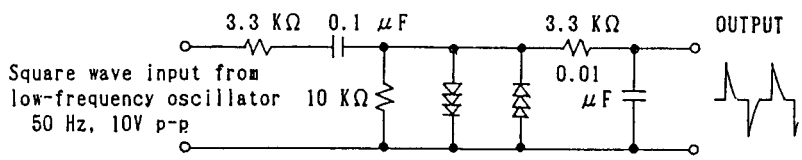
1) Check of operation of protection relay
   (1) Confirm that the relay turns ON approximately 5 seconds after the power switch is turned ON.
   (2) The relay should turn OFF approximately 0.5 seconds after the power switch is turned OFF.
2) Check of DC detection and servo circuitry operation
   (1) Turn the power on with no load.
   (2) After the speaker relay turns ON, apply DC+200mV to the CD input terminals. Confirm that the relay turns OFF.
   (3) Confirm that operation is the same as (2) above when an input of DC−200mV is applied.

Note) Under no circumstances connect a load or short the speaker terminals when performing the above test.

3) Signal input from the circuit illustrated below with no load.
   (1) Confirm that the speaker relay does not turn OFF even when a 2 ohm load is connected when a peak value of 35V p-p is output.
   (2) Next, confirm that when a 1 ohm load is connected the speaker relay switchse OFF and ON a couple of times and then stays OFF.

Note) The period before that relay stays OFF should not last for more than 1 minute.
Relay OFF status can be canceled by switching the power OFF.



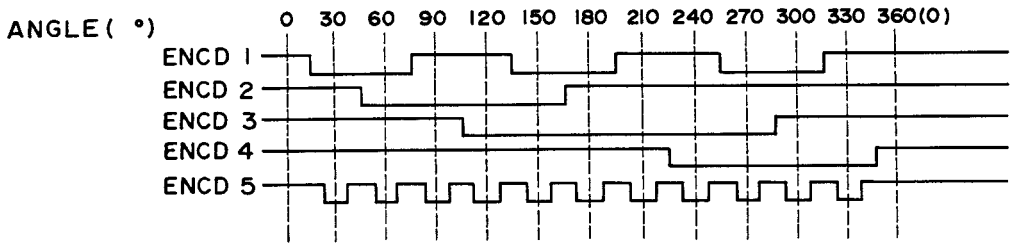


CIRCUIT DESCRIPTION

INPUT SELECTOR

The INPUT SELECTOR is switched over using a rotary encoder driven by a motor. When the INPUT SELECTOR is switched over with an input switch or the remote controller, an UP/DOWN signal is output from the microprocessor(Q801 LC6520H)to start the motor. By monitoring the output of the encoder, when the required position is detected, the motor is stopped.

The relationship between the INPUT SELECTOR positions and encoder outputs are explained below.



ENCD 4~1 (HEX)	F	E	C	D	9	8	A	B	3	2	6	7
INPUT SELECTOR	—	CD	AUX-1	AUX-2	TAPE-2	TAPE-1	DAT	TUNER	DIGITAL-1	DIGITAL-2	DIGITAL-3	PHONO

The INPUT SELECTOR actually operates as described below.

1) When the position is switched over with a key or the remote controller, SEL UP or SEL DOWN is output from the microprocessor to turn the selector in the direction which is nearer to the present position. (The increasing direction is UP, and the decreasing direction is DOWN.)

2) While observing the input of the ENCD5 signal from the microprocessor, the 4-bit input code from ENCD4-ENCD1 is read at the point where the signal changes from"H"to"L", and when the code of the target position is detected, the motor will stop. When the code is different, the motor will rotate further and the same 4-bit code will be checked at the next point where the ENCD5 input changes. The same operation will be repeated until it reaches the target position.

3) If the target position cannot be reached within 10sec., since the SEL UP/DOWN signal is output, the INPUT SELECTOR of the target position will flash (error display).

4) When the target position is changed before the selector reaches the first target position, it responds immediately, and changes the direction of rotation to the oen which is nearer to the new target position.

Operation when ROWER is switched ON

When the POWER is switched on (RES input "L"-> "H"), the port and RAM will be initialized. Then, the levels of the initial MODE and BACK inputs are read to determine the required operation. The POWER and MUTING terminals of the microprocessor should be off when the memory is not backed up. When it is backed up, it should be set to the same condition as before power went down.

When the POWER is switched ON, the following operation will be carried out while the MUTE output is set to "H".

1) When it is not backed up

When ENCD5"L", the indicators of the INPUT SELECTOR corresponding to codes ENCD4-ENCD1 will light. Also, S1 and S2 will be output. When the ENCD5 input is"H", or when the 4-bit code is not effective or is not present, the rotary switsh will rotate in the UP direction and stop at the nearest effective position, the INPUT SELECTOR will be indicated and the port will output a signal. If an effective position cannot be found within 10 sec. after this operation has started, the rotation of the rotary switch will be stopped and all the indicators of the INPUT SELECTOR will flash with a frequency of 1 Hz.

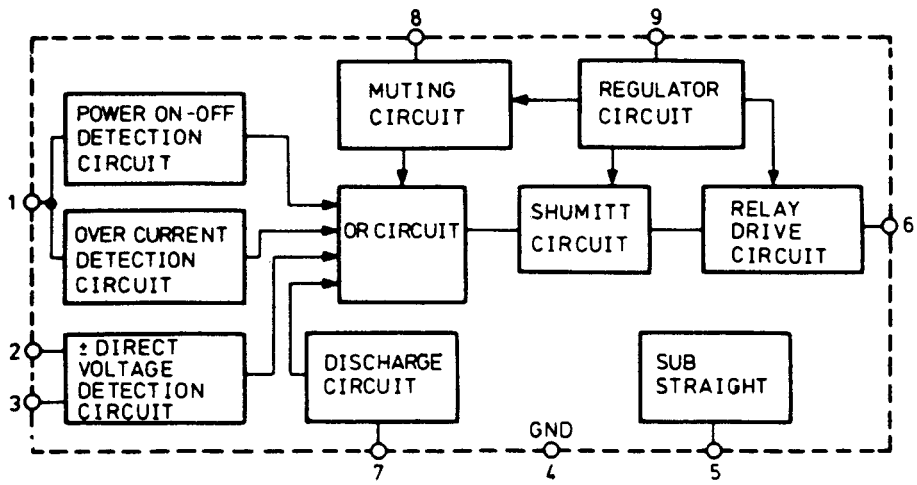
2) When it is backed up

The positions of the INPUT SELECTOR before power went down will be indicated and the port will output a signal. When ENCD5 is"H", or when the 4-bit code is different from the last one, the rotary switch will be rotated to the last position. At this time, if the last position cannot be detected within 10 sec., the rotation of the rotary switch will stop and the indicator of the last INPUT SELECTOR will flash with a frequency of 1 Hz.

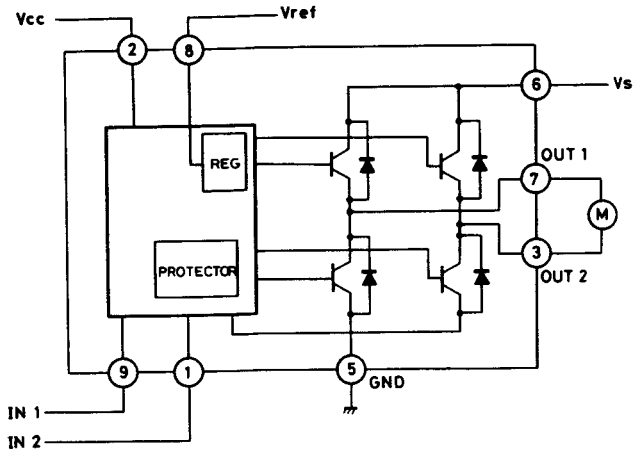
After this, the rotary switch will rotate once in the UP direction to clean the contact points, and will stop in the original portion. At this time, the INPUT SELECTOR indicator S1 and S2 outputs will not be changed.

IC BLOCK DIAGRAM

TA7317P (Protective circuit)

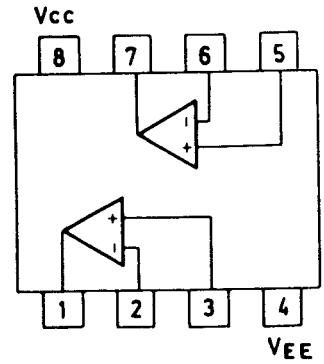


TA7291S (Motor drive)

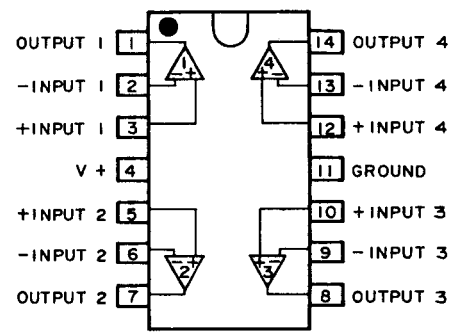


INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

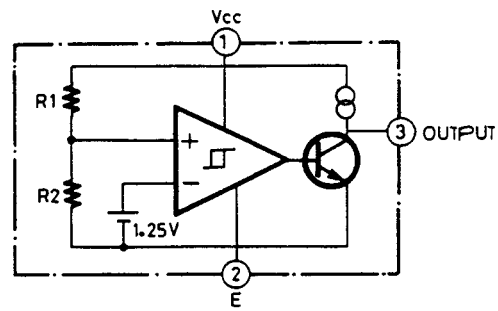
NJM5532DD (OP Amp)
NJM4560DX



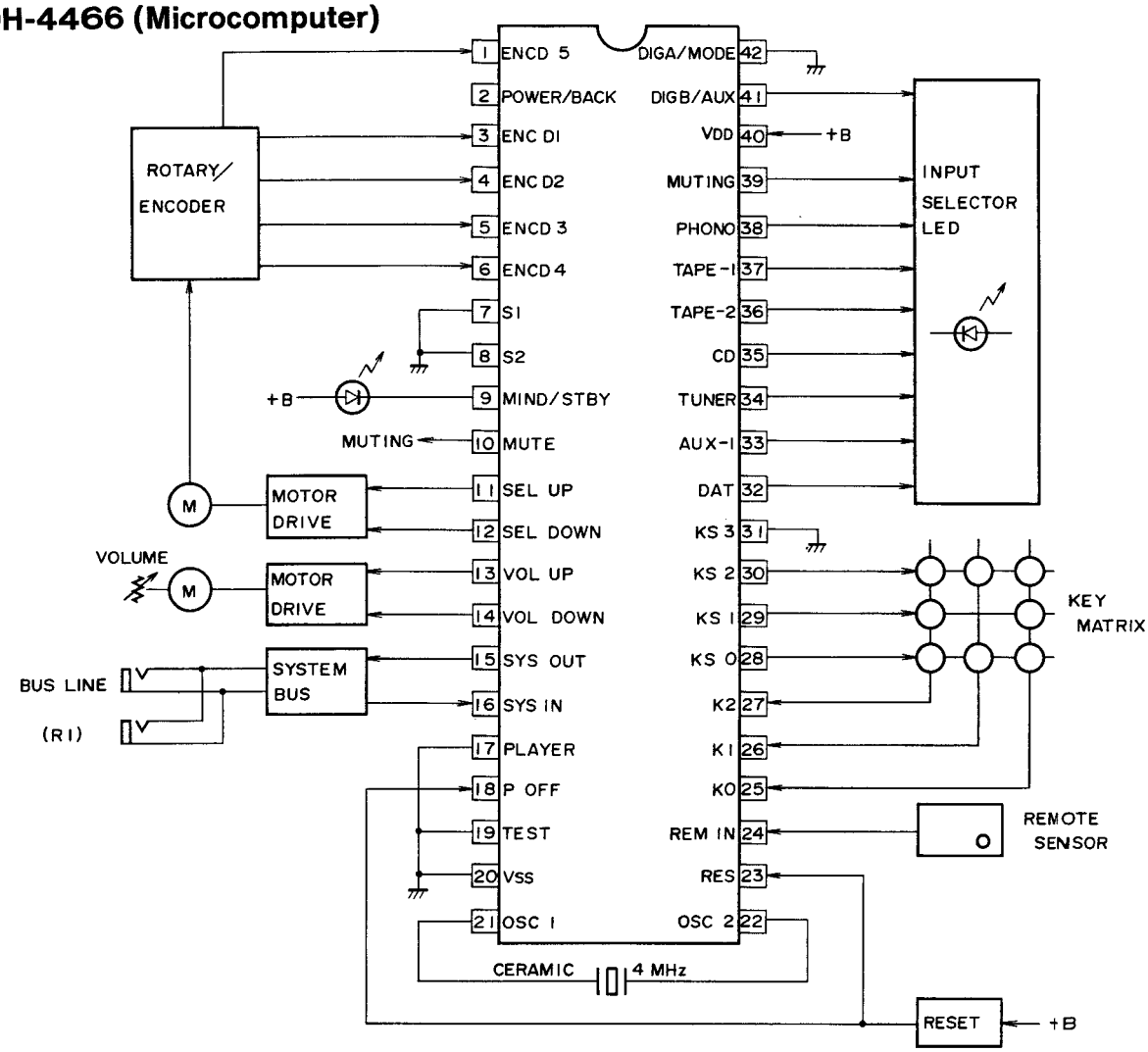
NJM2902N (OP Amp)



M51943BSL (System reset)



LC6520H-4466 (Microcomputer)

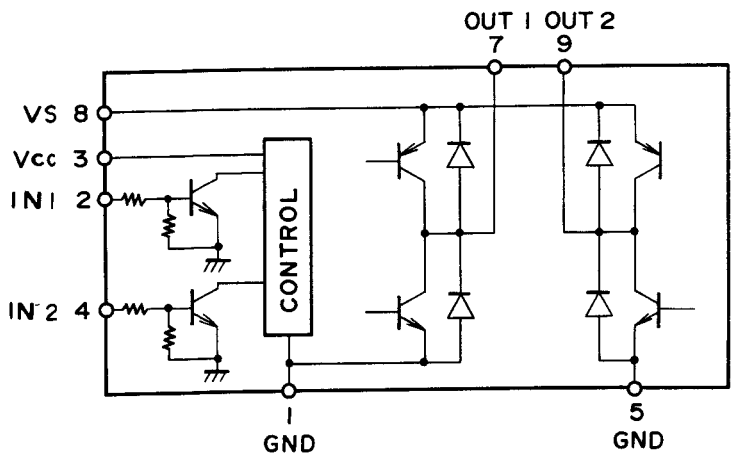


Pin No	Pin name	Symbol	Function
2	PA3	POWER/BACK	Power control output terminal. "L" when power on.
1 3 4 5 6	PA2 PB0 PB1 PB2 PB3	ENCD5 ENCD1 ENCD2 ENCD3 ENCD4	Input selector position detect input terminal.
7	PC0	S1	Digital signal switching output terminal.
8	PC1	S2	
9	PC2	M.IND/STBY	Muting & Stand-by indicator output terminal.
10	PC3	MUTE	Input selector muting output terminal. Active "H".
11	PD0	SEL UP	Input selector UP/DOWN output terminal. Active "H".
12	PE0	SEL DOWN	
13	PD2	VOL UP	Volume UP/DOWN control output terminal. Active "H".
14	PD3	VOL DOWN	

Input Selector	output S1	S2
DIGITAL-1	L	H
DIGITAL-2	H	L
DIGITAL-3	L	L
ANALOG	H	H

15	PE0	SYS OUT	System code output terminal. Active "L".
16	PE1	SYS IN	System code input terminal. Active "H".
17	PE2	PLAYER	PLAYER control output terminal. Active "L". Output "H" for 200ms if remote control K64 code is input when INPUT SELECTOR input is PHONO.
18	PE3	POFF	This is the input terminal for detection of the power failure.
19	TEST	TEST	LSI test terminal. Connect to Vss.
20	VSS	VSS	Ground terminal. Connect to Vss.
21	OSC1	OSC1	Connect to the 4.00MHz ceramic oscillator.
22	OSC2	OSC2	
23	RES	RES	System reset terminal. Active "L".
24	PF0	REM IN	Remote control signal input terminal. Active "L". The photo-sensor output is connected to this terminal.
25	PF1	K0	Key input terminals. Active "H".
26	PF2/SCK	K1	
27	PF3/INT	K2	
28	PG0	KS0	Key scan output terminals. Active "L".
29	PG1	KS1	
30	PG2	KS2	
31	PG3	KS3	
32	PI0	DAT	Input selector indicator output terminal. Active "L".
33	PI1	AUX-1	
34	PI2	TUNER	
35	PI3	CD	
36	PJ0	TAPE-2	
37	PJ1	TAPE-1	
38	PJ2	PHONO	
39	PJ3	MUTING	Muting control output terminal. Muting on "L".
40	VDD	VDD	Power supply terminal. (+5V)
41	PA0	DIGB/AUX-2	Input selector indicator output terminal. Active "L".
42	PA1	DIGA/MODE	AUX-2, MODE="L".

LB1638 (Motor drive)



Tauth Table

IN 1	IN 2	OUT 1	OUT 2	モード
H	L	H	L	NORMAL
L	H	L	H	REVERSE
H	H	L	L	BRAKE
L	L	OFF	OFF	WAIT

PRINTED CIRCUIT BOARD – PARTS LIST

PHONO EQUALIZER CIRCUIT PC BOARD (NAAF-3901-1A)-PART LIST

CIRUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q105,Q106	222902	NJM5532D-D
Q109	222780205MIT	M5F78M20L
Q110	222790205MIT	M5F79M20L
	Transistors	
Q101,Q102	2211535 OR	2SK146-GR OR
	2211536 OR	2SK146-BL OR
	2211537	2SK146-V
Q107,Q108	2211255 OR	2SC1815-GR
	Diodes	
D101~D104	225251	LED. TLR112
	Capacitors	
C103,C104	372121024	1000pF,50V,STYRENE
C105,C106	372501514	150pF,125V,STYRENE
C107,C108	372121014	100pF,50V,STYRENE
C109,C110	391222214	220 μF,6.3V,ELECT.(MUSE)
C111,C112	372122024	2000pF,50V,STYRENE
C113~C116	379122434	0.024 μF,50V,FILM(DEW)
C117,C118	374724334	0.043 μF,50V,FILM(TF)
C119~C122	391651017	100 μF,25V,ELECT.(FS)
C123,C124	374722024	2000pF,50V,FILM(TF)
C129,C130	354780109	1 μF,50V,ELECT.
C147,C148	354761029	1000 μF,35V,ELECT.
C149,C150	354741019	100 μF,16V,ELECT.
C151,C152	391254717	470 μF,25V,ELECT.(MUSE)
C153,C154	391252217	220 μF,25V,ELECT.(MUSE)
C155,C156	391251017	100 μF,25V,ELECT.(MUSE)
	Coils	
L101,L102	231133	NCH-1188
	Switch	
S101	25065394	NSS-84148,SLIDE SWITCH
	Terminal	
P101	25045296	NPJ-2PDBL-155
	Plug	
P102	25055100	NPLG-3P84
	Jumper sockets	
JL101,KL102	25050267	NSCT-3P95

ROTARY ENCODER CIRCUIT PC BOARD(NASW-3902-1A)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q251	2212600	DTA124ES
Q252	2211455 OR	2SA1015-GR OR
	2211454	2SA1015-Y
	Diode	
D251	223163	1SS133
	Capacitors	
C253~C258	373301014	100pF,125V,STYRENE(PP)
C262	354741009	10 μF,16V,Elect.
C273	373721044	0.1 μF,50V,FILM(TF)
C274	374721035	0.01 μF,50V,FILM(TF)
	SWitch	
S251	25065282	NRL-2P1.25A-DC12-39
	Terminals	
P251	25045233	NPJ-2PDBL-107
P252	25045166	NPJ-6PDBL-60
P253	25045172	HSJ1003-01-020,MINI-JACK
	Plugs	
P254,P255 P257,P258	25055133	NPLG-3P-117
	Socket ass'y	
P256	2009990090	NSAS-6P0128
	Jumper sockets	
JL251,JL253	25050273	NSCT-9P101
JL252	25050267	NSCT-3P-95
	Bracket	
	27141059	(GROUND)
	Spacer	
	27270244	

DIRECT SWITCH BOARD(NASW-3903-1)-PART LIST

CIRUIT NO.	PART NO.	DESCRPTION
	Switch	
S371	25030329A	NRSF-164-20SS
	Sockets	
P254	2009990013	NSAS-6P0022
P255	2000931	NSAS-6P884

VOLUME CONTROL PC BOARD(NAAF-3904-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitor	
C323	374721035	0.01 μF,50V,FILM(TF)
	Resistor	
R321	5104272	N27DGL50KT30,VARIABLE
	Socket ass'y	
P321	2009990091B	NSAS-14P0129
	Plug	
P322	25055234	NPLG-3P218

MUTING / MODE SWITCH PC BOARD(NASW-3905-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S301	25035601	NPS-222-L565

TONE CONTROL CIRCUIT PC BOARD(NAAF-3906-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C301~C304	374721635	0.016 μF,50V,FILM(TF)
C305,C306	374721825	1800pF,50V,FILM(TF)
C307,C308	374728234	0.082 μF,50V,FILM(TF)
	Resistors	
R301	5148107A	N16RGMC250KMN25,VARIABLE
R302	5142002	N16RGM11C100K25,VARIABLE
R303	5144011	N16RGM11C70K88K25,VARIABLE

POWER SUPPLY CIRCUIT (I) PC BOARD(NAPS-3907-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTOIN
	Diodes	
D921	22380014	PB1023F
D925,D926	22380012	HER303F
D931,D933	22380013	RDF02M
	Coils	
L931	230906	BL02RN2-R62
L932,L933	230905	BL02RN1-R62
	Capacitors	
C921,C922	3504233	18000 μF,63V,ELECT.
C923,C924	374503345	0.33 μF,125V,FILM(ME)
C931,C932	374722235	0.022 μF,50V,FILM(TF)
C935,C936		
C933	354741029	1000 μF,16V,ELECT.
C937	374501045	0.1 μF,125V,FILM(ME)
C938,C939	354761029	1000 μF,35V,ELECT.
	Resistors	
R931	442520104	1 Ω,1/2W,METAL OXIDE FILM
R932,R933	442522294	0.22Ω,1/2W,METAL OXIDE FILM
	PLUG	
P923	25055133	NPLG-3P-117
	Socket ass'y	
P102	2009990069	NSAS-6P0106
P921,P922	2009990089	NSAS-4P0127
	Jumper socket	
JL931	25050267	NSCT-3P95
	Bracket	
	27301270	BUS
	Tape	
	29110083	

REMOTE CONTROL SENSOR PC BOARD(NADIS-3908-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Photo receiving unit	
U018	24130003	GP1U50XS
	Diodes	
D881	225141	SEL2213C
D882	223163	1SS133
	Capacitor	
C882	354744709	47 μF,16V,ELECT.
	Plug	
P881	25055133	NPLG-3P117
	Holder	
	27190679	HOLDER(LED)

STAND-BY LED PC BOARD(NADIS-3909-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Q911	2213640	DTC123JS
	Diodes	
D911,D912	225142DX2	SEL2913K-DX2
	Jumper socket	
JL911	25050267	NSCT-3P95
	Holder	
	27190678	HOLDER(LED)

STAND-BY SWITCH PC BOARD(NASW-3910-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S901	25035625	NPS-121-S583

SPEAKER SWITCH PC BOARD(NASW-3911-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diode	
D856	223163	1SS133
	Switch	
S851	25030311A	NRSF-124-20BU
	Relay	
RL853	25065174	NRL-2P1A-DC12-09
	Stereo jack	
P851	25045229	HLJ4317-01-3120
	Socket	
P852	2009990092	NSAS-14PO13C
	Bracket	
	27150208	

POWER SWITCH CIRCUIT PC BOARD(NAETC-3912-1A,)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diode	
D951	223163	1SS133
	Capacitor	
⚠ C971	3500065A	0.01μF,AC400V/125V,FILM(IS)
⚠ C973	3500065A	0.01μF,AC400V/125V,FILM(IS)
	Relay	
RL951	25065248	NRL-1P15A-DC12-29
	Jumper socket	
JL955	25050267	NSCT-3P95
	Fuse holder	
⚠ F901a	25050065	YSH403T
⚠ F902a	25050065	YSH403T
	Terminal	
	25060092	NTM-1S33

INPUT SELECTOR KEY PC BOARD(NASE-3913-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D211~D218	225137DG OR	LED,SEL2413-DG OR
	225137DY OR	LED,SEL2413-DY OR
	225137CG OR	LED,SEL24137CG OR
	225137CY	LED,SEL24137CY
	Switches	
S211~S218	25035548	NPS-111-S510
	Holder	
	27190731	HOLDER(LED)

MICRO PROCESSOR CIRCUIT PC BOARD(NAAF-3914-1A)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q801	22240357	LC6520H-4466
Q802	22240358	LB1638
Q803	22240239	TA7291S
Q804	222951	M51943BSL
Q805	222780052	78M05
	Transistors	
Q806,Q808	2213090	DTA114YS
Q812,Q814		
Q807,Q811	2211255	2SC1815-GR
Q813,Q815	221282	DTC144ES
	Diodes	
D801~D806	223163	1SS133
D809		
D812~D816		
D810,D811	224450562	MTZ5.6B,Zener
	Coils	
L801	233409K220	NCH-1284
L802~L805	230906	BL02RN-R62
	Ceramic resonator	
X801	3010150	CST4.00MGW
	Capacitors	
C807,C815	354741009	10μF,16V,ELECT.
C810,C814	354744709	47μF,16V,ELECT.
C822,C825		
C818	354780479	4.7 μF,50V,ELECT.
C819	354780109	1 μF,50V,ELECT.
C821	354761009	10μF,35V,ELECT.
C824	354724719	470 μF,6.3V,ELECT.
C827	3000051	0.047F,5.5V,SUPER
C829	375524744	0.47μF,50V,FILM(MMT)
C830,C831	374721044	0.1 μF,50V,FILM(TF)
	Resistors	
R801	49163103405	RM1/101J 10K×5,NETWORK
R817	49163473409	RM1/101J 47K×9,NETWORK
	Socket ass'y	
P257	2000560	NSAS-6P516
P258	2000931	NSAS-6P884
P322	2000551	NSAS-6P507
P881	2000809	NSAS-6P765
P923	2000784	NSAS-6P740
	Jumper sockets	
JL801	25050268	NSCT-4P96
JL802	25050267	NSCT-3P95

POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-3915-1A)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q519,Q520	222570	NJM4560D-X
Q585	22240040	NJM2902N
Q586	226007	TLP-531
Q851	222584	TA7317P
	Transistors	
Q501,Q502	2212805 OR	2SK389-GR OR
	2212806 OR	2SK389-BL OR
	2212807	2SK389-Y
Q503~Q506	2211732 OR	2SC1845-F OR
	2211733	2SC1845-E
Q507,Q508	2213666 OR	2SA1240-F OR
	2213667	2SA1240-G
Q511,Q512	2211455 OR	2SA1015-GR OR
	2211454	2SA1015-Y
Q513,Q514	2211354 OR	2SA949-Y OR
Q603,Q604	2211353	2SA949-O
Q517,Q518	2211255 OR	2SC1815-GR OR
	2211256	2SC1815-BL
Q581~Q584	2211634 OR	2SC2229-Y OR
Q589,Q601	2211633	2SC2229-O
Q602,Q617		
Q618		
Q605,Q606	2202034 OR	2SD1763A-D OR
	2202035	2SD1763A-E
Q607,Q608	2202024 OR	2SB1186A-D
	2202025	2SB1186A-E
Q619,Q620	2211793 OR	2SA992-E OR
	2211792	2SA992-F
Q852	2212600	DTA124ES
Q853	2211504	2SA950-Y
Q901	2201512 OR	2SD1200-Q OR
	2201513	2SD1200-R
Q902	2201502 OR	2SB889-Q OR
	2201503	2SB889-R
Q903,Q904	2211945	2SK246-GR
Q905	2211255	2SC1815 GR
Q906	2211455	2SA1015-GR
	Diodes	
D505,D506	225251	TLR1122
D517~D520		
D511~D516	223163	1SS133
D851,D852		
D854		
D853	224450623	MTZ6.2C,ZENER
D901,D902	224450562	MTZ5.6B,ZENER
D903		
	Coils	
L601,L602	231134S	S-0.8E
	Capacitors	
C281~C286	373301014	100pF,125V,STYRENE(PP)
C501,C502	373631014	100pF,100V,FILN(KP)
C509,C510		
C511,C512	372123304	33pF,50V,STYRENE
C513~C516	391252207	22μF,25V,ELECT.(MUSE)
C517,C518	372123304	33pF,50V,STYRENE
C519,C520	354722219	220 μF,6.3V,ELECT.
C521,C522	374791044	0.1 μF,63V,FILM(TF)
C523,C524	391242217	220 μF,16V,ELECT.(MUSE)
C525,C526	373732734	0.027 μF,100V,FILM(MKT)
C527,C528	373734734	0.047 μF,100V,FILM(MKT)
C529,C530	354790479	4.7 μF,100V,ELECT.
C581	391221027	1000μF,6.3V,ELECT.(MUSE)
C582	354780229	2.2 μF,50V,ELECT.
C583	354764709	47μF,35V,ELECT.
C605,C606	391241017	100 μF,16V,ELECT.(MUSE)
C607,C608	373791044	0.1 μF,63V,FILM(MKT)
C609,C610	374794734	0.047 μF,63V,FILM(TF)
C611,C612	379122235	0.022 μF,50V,FILM(DEW)
C613,C614	379121035	0.01μF,50V,FILM(DEW)
C615~C622	373791044	0.1 μF,63V,FILM(MKT)
C851	354722219	220 μF,6.3V,ELECT.
C852	354742209	22μF,16V,ELECT.
C853	354784799	0.47μF,50V,ELECT.
C855	354743319	330 μF,16V,ELECT.
C858,C859	374721044	0.1 μF,50V,FILM,(TF)
C901~C903	354774719	470 μF,63V,ELECT.
C905,C906		
C909,C910	354761009	10μF,35V,ELECT.
C911,C912	354761019	100 μF,35V,ELECT.
C913,C914	354751029	1000μF,25V,ELECT.
C915,C916	354754719	470 μF,25V,ELECT.
C917	391221027	1000μF,6.3V,ELECT.(MUSE)
C918	374724734	0.047 μF,50V,FILM(TF)
	Resistor	
R527,R528	441622734	27Ω,1W,METAL OXIDE FILM
R535,R536	5210062 OR	N06HR4.7KBD OR
	5210216	N06HR5KBD,SEMI-FIXED
R601,R602	442522224	2.2 Ω,1/2W,METAL OXIDE FILM
R603,R604	442522214	220 Ω,1/2W,METAL OXIDE FILM
R607~R614	442520224	2.2 Ω,1/2W,METAL OXIDE FILM
R615~R618	4000078	0.33Ω,5W,MATAL PLATE
R623~R626		
R633,R634	441720824	8.2 Ω,2W,METAL OXIDE FILM
R862	442525114	510 Ω,1/2,METAL OXIDE FILM
R875,R876	441623914	390 Ω,1W,METAL OXIDE FILM
R901,R902	441620684	6.8 Ω,1W,METAL OXIDE FILM
R903		
R905,R906	442524314	430 Ω,1/2,METAL OXIDE FILM
R961	441623314	330 Ω,1W,METAL OXIDE FILM
	Switch	
s281	25065367	NSS-64140,SLIDE
	Relaies	
RL851,RL852	25065316	NRL-2P7A-DC12-43
	Socket ass'y	
P752	2009990003	NSAS-06P0007
P753	2009990004	NSAS-06P0008
	Terminals	
P281~P283	25045165	NPJ-4PDBL59
	Plugs	
P256	25055133	NPLP-3P-117
321,P852	25055137	NPLP-7P-121
	Jumper sockets	
JL951	25050267	NSCT-3P95
JL952	25050268	NSCT-4P96
	Brackets	
	27141059	(GROUND)
	27300877	(BUS)
	Cushion	
	28140963	
	Holders	
	27301186	
	27301271	
	Tape	
	29110082	

SPEAKER TERMINAL PC BOARD(NAETC-3916-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminal	
P751	25060138	NTM-8PDMN066

POWER SUPPLY PC BOARD(NAETC-3917-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistor	
Q951	2213650	DTD113ZS
	Diode	
D953	22380013	RDF02M
	Transformer	
⚠ T902	2300570	NPT-1075G
	Capacitors	
C952,C953	374722235	0.002 μF,50V,FILM(TF)
C954	354752229	2200 μF,25V,ELECT.
	Resistor	
R952	441628214	820 Ω,1W,METAL OXIDE FILM
	Plate	
	28175178	INSULATING PLATE

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK.REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

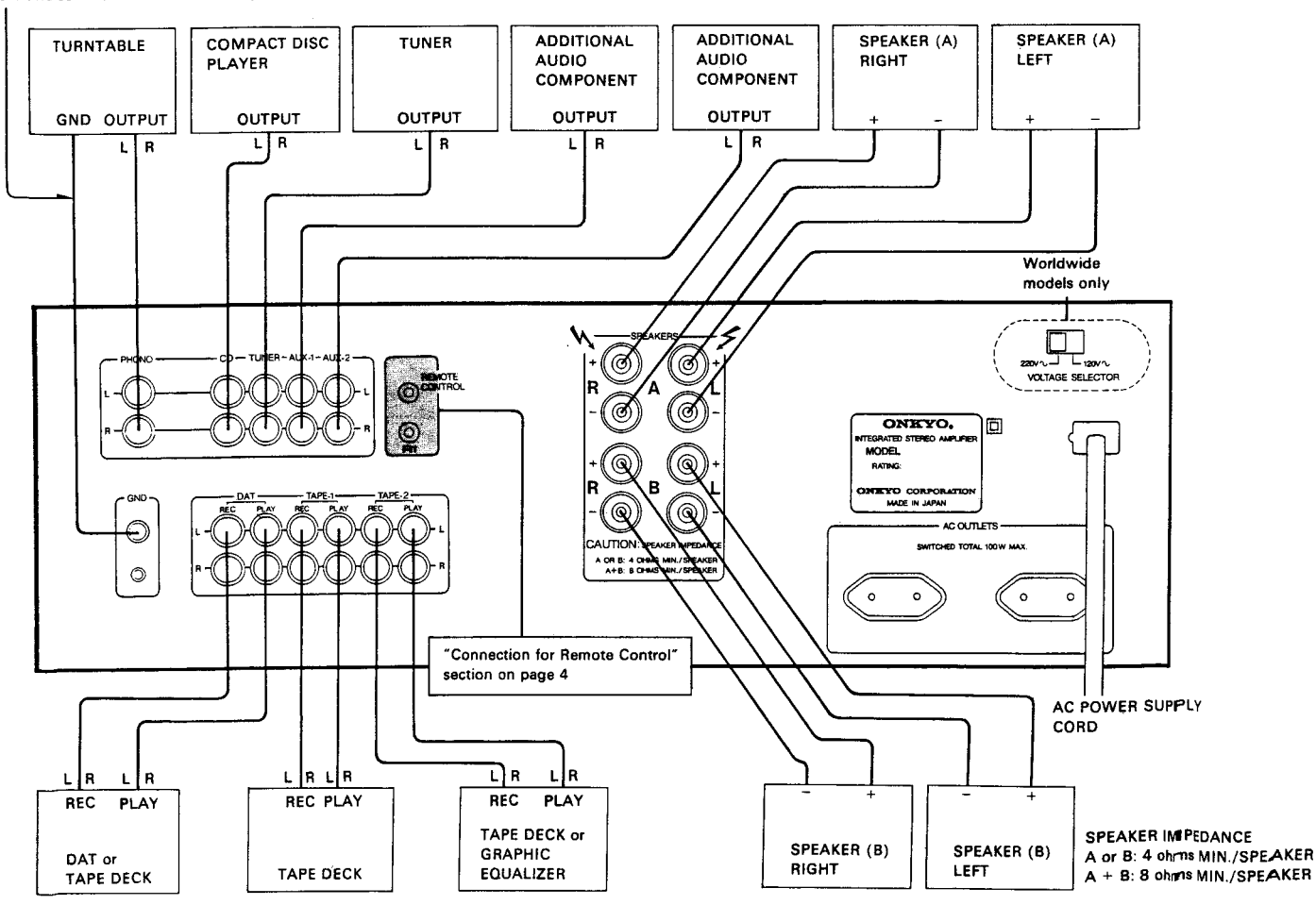
PACKING- PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
A851	29052084-1	MASTER CARTON BOX
A852	29091406A	PAD ASS'Y,LEET
A853	29091126-1D	PAD RIGHT
A854	261504	PAPER TAPE
A855	29100063	500 ×750,POLY-VINYL BAG
A857	282301 OR	SEALING HOOK OR
	282311	SEALING HOOK
A858	260012 OR	DAMPLON TAPE(W=50)OR
	29110071-1	DAMPLON TAPE(W=50)
	ACCESSARY BAG	
A901	29341535	INSTRUCTION MANUAL
A908	29365020A	WARRANTYCARD
A909	29100094A	POLY-VINYL BAG(WARRANTYCARD)
A902	29100097	350 ×250,POLY-VINYL BAG
A904	24140180	RC-180S,REMOTE CONTROL TRANSMITTER
A905	3010054	UM-3,BATTERY
A906	2010200	3.5mm,MINI PLUG ASS'Y

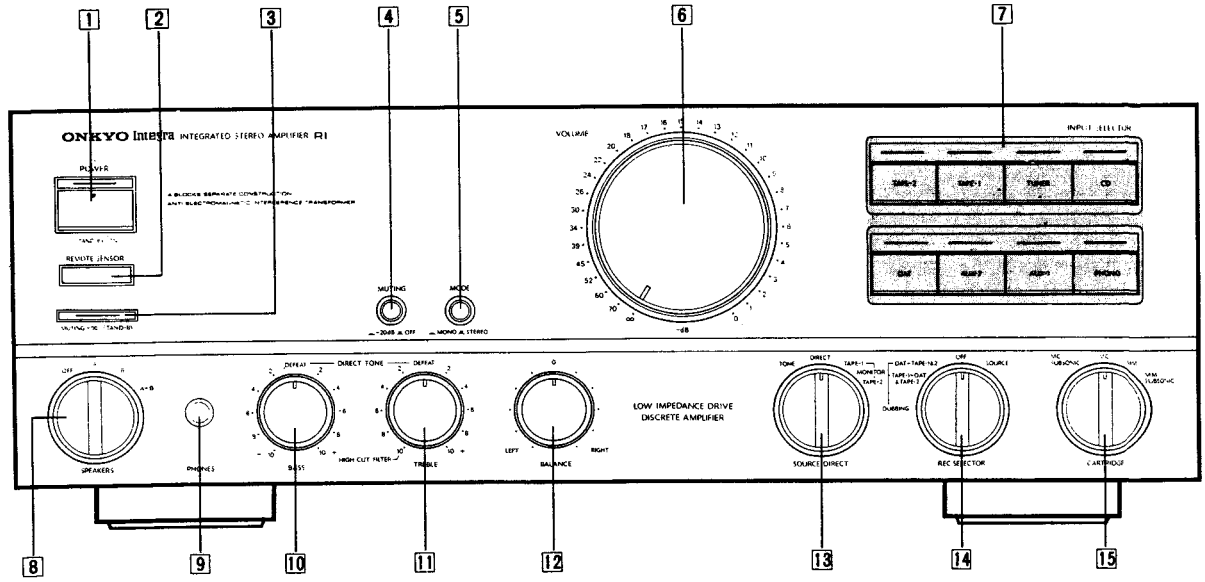
SYSTEM CONNECTIONS

Do not plug in the power cord until all connections have been made.

Ground connection is not necessary for turntables without ground leads.



FRONT PANEL FACILITLES



1 Power Button (POWER)
Press the POWER button to turn on the power.
Press this button to switch the on/off status of the power supply and the AC outlets on the rear panel. Power can also be turned on by using the remote control POWER button. An orange band over the power button indicates power is on.

2 Remote Control Sensor
This receives signals sent from RC-180S remote control transmitter.

3 MUTING −∞/STAND-BY Indicator
This indicator is illuminated and the unit enters STAND-BY mode, when the unit is plugged in. The power is turned ON/OFF by pressing the POWER button or remote control transmitter POWER button.
The indicator blinks on and off and the sound is muted when the remote control transmitter MUTING −∞ button is pressed.

4 Muting Switch (MUTING)
When this switch is set to the −20dB position, the volume level is reduced to one-tenth of the level set by the VOLUME control.

5 Mode Selector Switch (MODE)
STEREO (▬) : Position for normal stereo listening.
MONO (▂) : Both right and left channel signals are sent to each speaker. Position for listening to monaural recordings or when adjusting the BALANCE control.

6 Volume Control Knob (VOLUME)
This controls volume. Turning it clockwise increases volume. When controlling with the remote control transmitter, pressing "UP" and "DOWN" increases and decreases volume respectively. This control employs the system of simultaneous changes in volume and boost characteristics.

7 Input Selector Buttons and Indicators (INPUT SELECTOR)
These buttons are used to select the desired program source. Pressing one releases the previously pressed button, so be sure to press only one button at a time. An indicator shows which program has been selected.

TAPE-2 : Tape deck connected to the TAPE-2 jacks.
TAPE-1 : Tape deck connected to the TAPE-1 jacks.
TUNER : Tuner connected to the TUNER jacks.
CD : Compact disc player connected to the CD jacks.
DAT : Tape deck connected to the DAT jacks.
AUX-1, 2 : Additional audio component connected to the AUX-1 or 2 jacks.
PHONO : Turntable connected to the PHONO jacks.

8 Speaker Selector Switch (SPEAKERS)
This unit can drive two different speaker systems at once. Use this selector to activate either or both speaker systems connected to the rear panel speaker terminals. In the OFF position, sound is heard only through the headphones.
OFF : All speakers off—only headphones operate.
A : Speakers A
B : Speakers B
A + B : Both speaker systems A and B.

9 Headphone Jack (PHONES)
Stereo headphones with a standard binaural plug can be connected here.

10 Bass Control Knob (BASS)
Turn right to boost or left to attenuate bass. In the DEFEAT position, the BASS tone control circuitry is completely bypassed.

11 Treble Control Knob (TREBLE)
Turn right to boost or left to attenuate treble. In the DEFEAT position, the TREBLE tone control circuitry is completely bypassed. When turned to the extreme left (−10) the TREBLE control acts as a high cut filter to eliminate scratches, hissing and other high frequency noise.

About the Variable Tone Boosting System
This unit is designed to gradually reduce the effect of the tone controls (BASS and TREBLE) when the VOLUME exceeds a certain level. The variable boosting system gradually reduces the boosting effect of the BASS and TREBLE controls when one or both of these controls is turned beyond (to the right of) the center defeat position and the VOLUME control is turned beyond the center position. When the VOLUME is turned all the way up, the frequency response will be flat again. The VOLUME settings below the center position have no effect on the DIRECT TONE controls. Also, BASS and TREBLE control settings below (to the left of) the center DEFEAT position are not altered by the volume level.

12 Balance Control Knob (BALANCE)
Adjust to control the relative volume level of the left and right speakers or headphones.

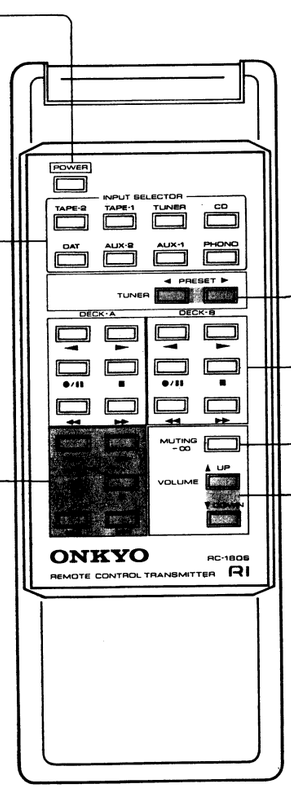
13 Source Direct Switch (SOURCE DIRECT)
TONE : The DIRECT TONE control, MUTING (−20dB), BALANCE and MODE of the performance can be altered for the source selected with the INPUT SELECTOR button, or remote control transmitter.
DIRECT : The volume of the source selected with the INPUT SELECTOR buttons or remote control transmitter can be input directly into the main amplifier. At this time the signal will bypass the DIRECT TONE, MUTING (−20dB), BALANCE, and MODE circuits.
MONITOR TAPE-1/TAPE-2
: The sound which is being recorded can be monitored, when the three-head tape deck is connected. When this is selected, DIRECT TONE, MUTING (−20dB), BALANCE, and MODE can be effective.

14 Recording Source Selector Switch (REC SELECTOR)
DAT or TAPE can be selected by the REC SELECTOR switch.
TAPE-1 ▶ DAT & TAPE-2 / DAT ▶ TAPE-1 & 2
: Use either of these settings for tape dubbing operations depending on which deck is being used for playback and which is being used for recording. For details, refer to the Operations section.
OFF : When not recording or dubbing.
SOURCE: Recording from the source selected by the INPUT SELECTOR buttons or remote control transmitter.

15 Cartridge Selector Switch (CARTRIDGE)
MC SUBSONIC : Turntable using an MC cartridge with subsonic filter.
MC : Turntable using an MC cartridge.
MM : Turntable using an MM cartridge.
MM SUBSONIC : Turntable using an MM cartridge with subsonic filter.

Use the MM position when a step-up transformer is being used with a turntable equipped with an MC cartridge.

Remote control transmitter RC-180S



Power Button (POWER)

Input Selector Buttons (TAPE-2, TAPE-1, TUNER, CD, DAT, AUX-2, AUX-1, PHONO)

CD Operation Buttons (CD)
These buttons are used to operate an ONKYO CD player with the RI mark.
❚❚ : Press this button to pause the CD play back. To resume disc play, press the PLAY (▶) button.
▶ : Press this button to play the CD player.
■ : Press this button to stop the CD player.
⏮ : Press this button to go back to the beginning of the current track and again to skip back to the previous track.
⏭ : Press this button to skip to the next track.

Tuner Operation Buttons (TUNER)
◄ PRESET ► : Preset memory DOWN/UP buttons

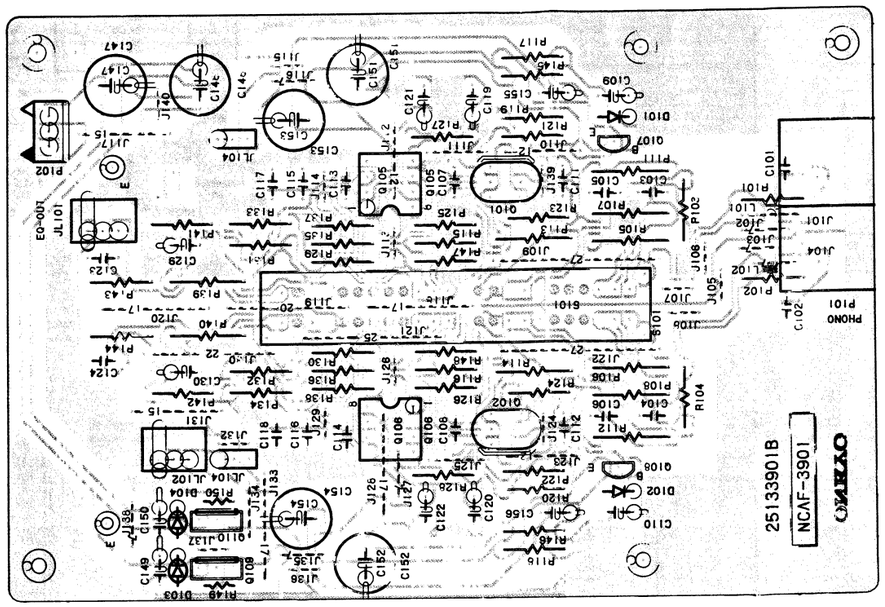
Tape Operation Buttons (DECK-A, DECK-B)
These buttons control ONKYO double cassette tape decks that can be remote controlled. Use the DECK-B buttons to control single cassette tape decks with the RI mark.
◄ : The tape plays, moving from right to left, or, in the recording stand-by mode, recording begins.
▶ : The tape plays, moving from left to right, or, in the recording stand-by mode, recording begins.
●/❚❚ : When this is pressed, the recording stand-by mode is entered.
■ : Interrupts all operations.
◀◀ : Fast forward from right to left.
▶▶ : Fast forward from left to right.

Audio Muting Button (MUTING −∞)
This button temporarily switches off the sound from the speaker or headphone. Pressing this button will operate the A-R700 audio muting circuit. The audio muting indicator will blink on and off. Pressing the button again or using the POWER button to turn the power on will turn off the audio muting.

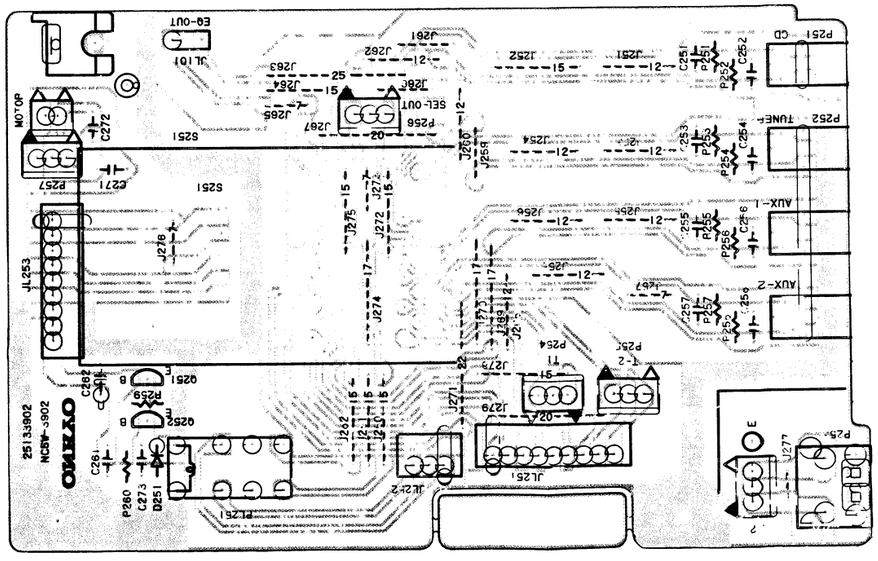
Volume Buttons (▲ UP, ▼ DOWN)

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

NAAF-3901



NASW-3902



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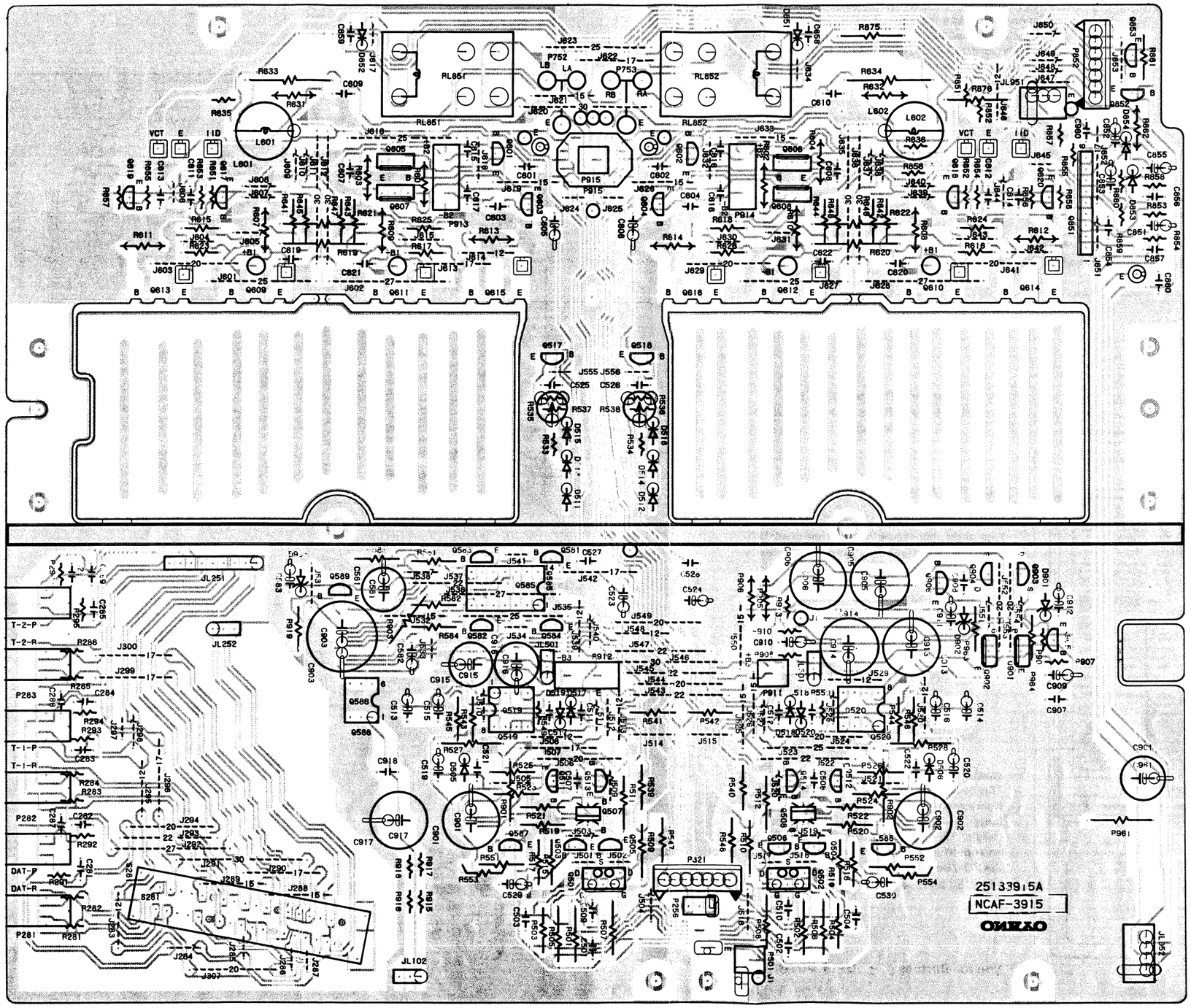

NASW-3903

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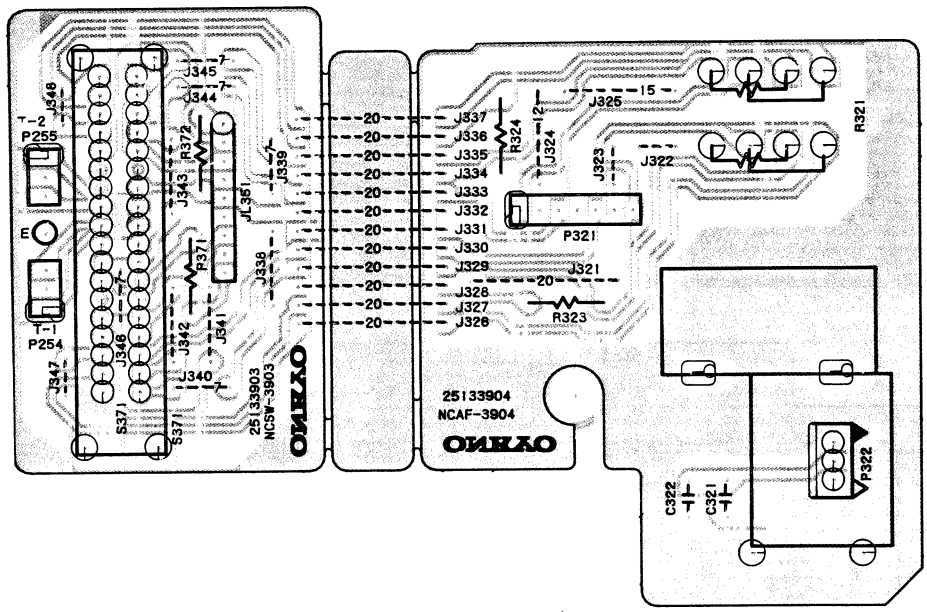

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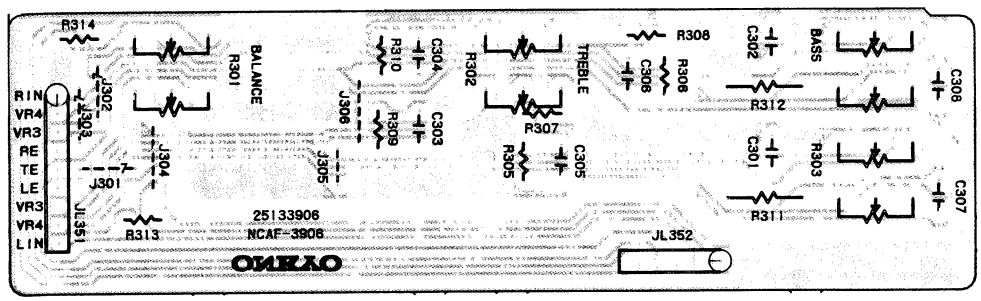

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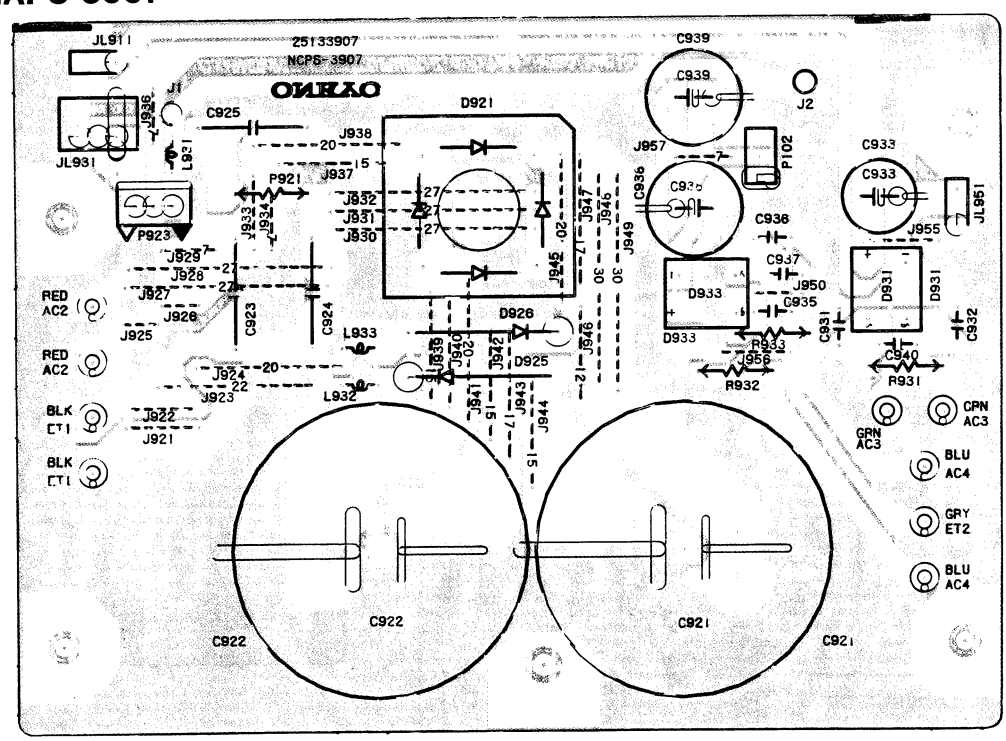

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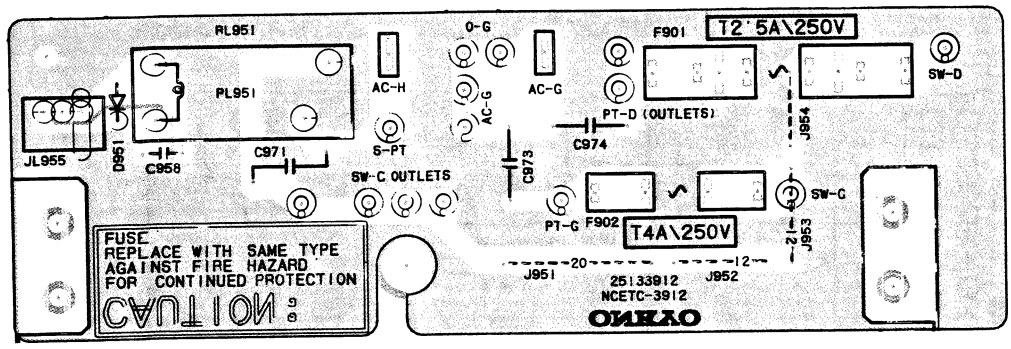

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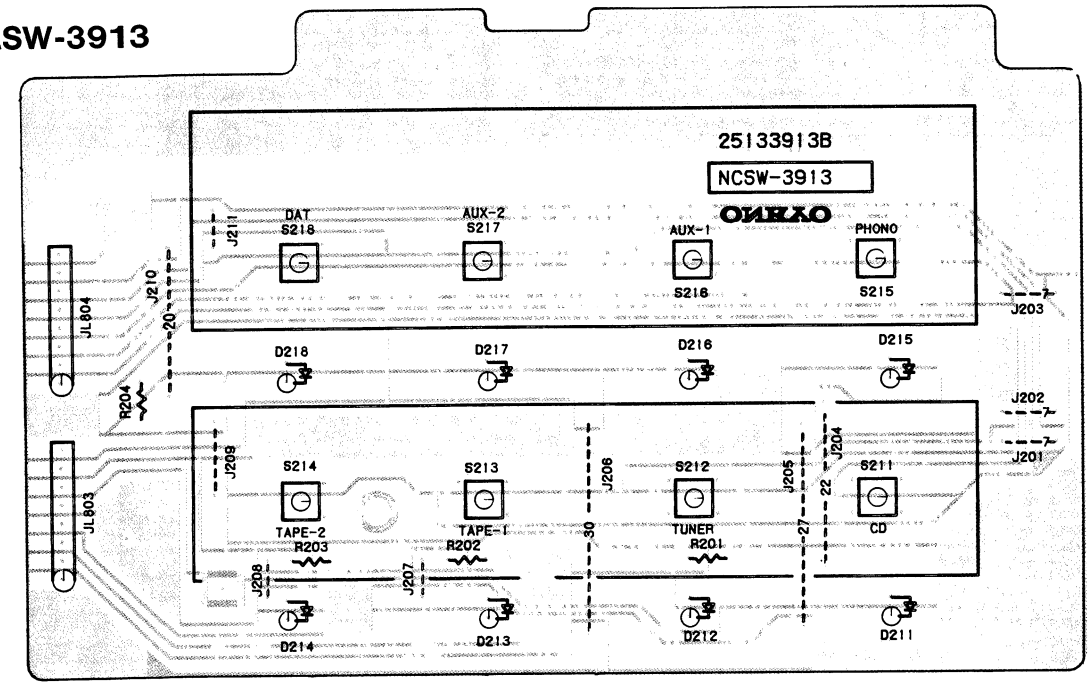

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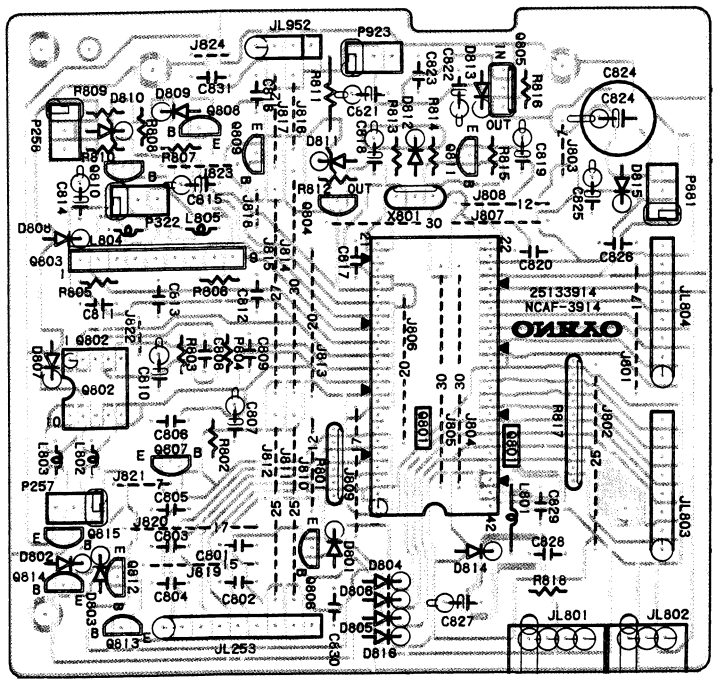

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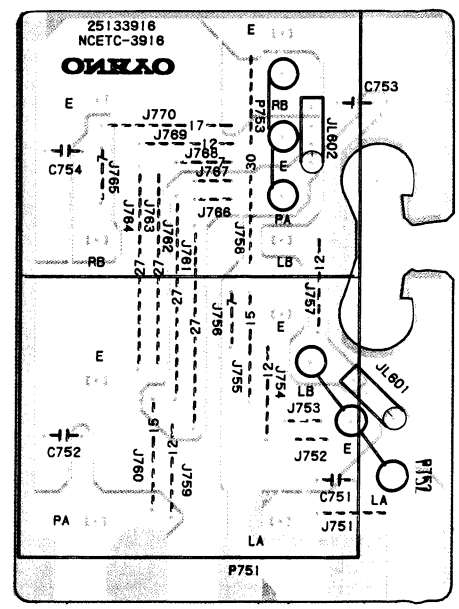
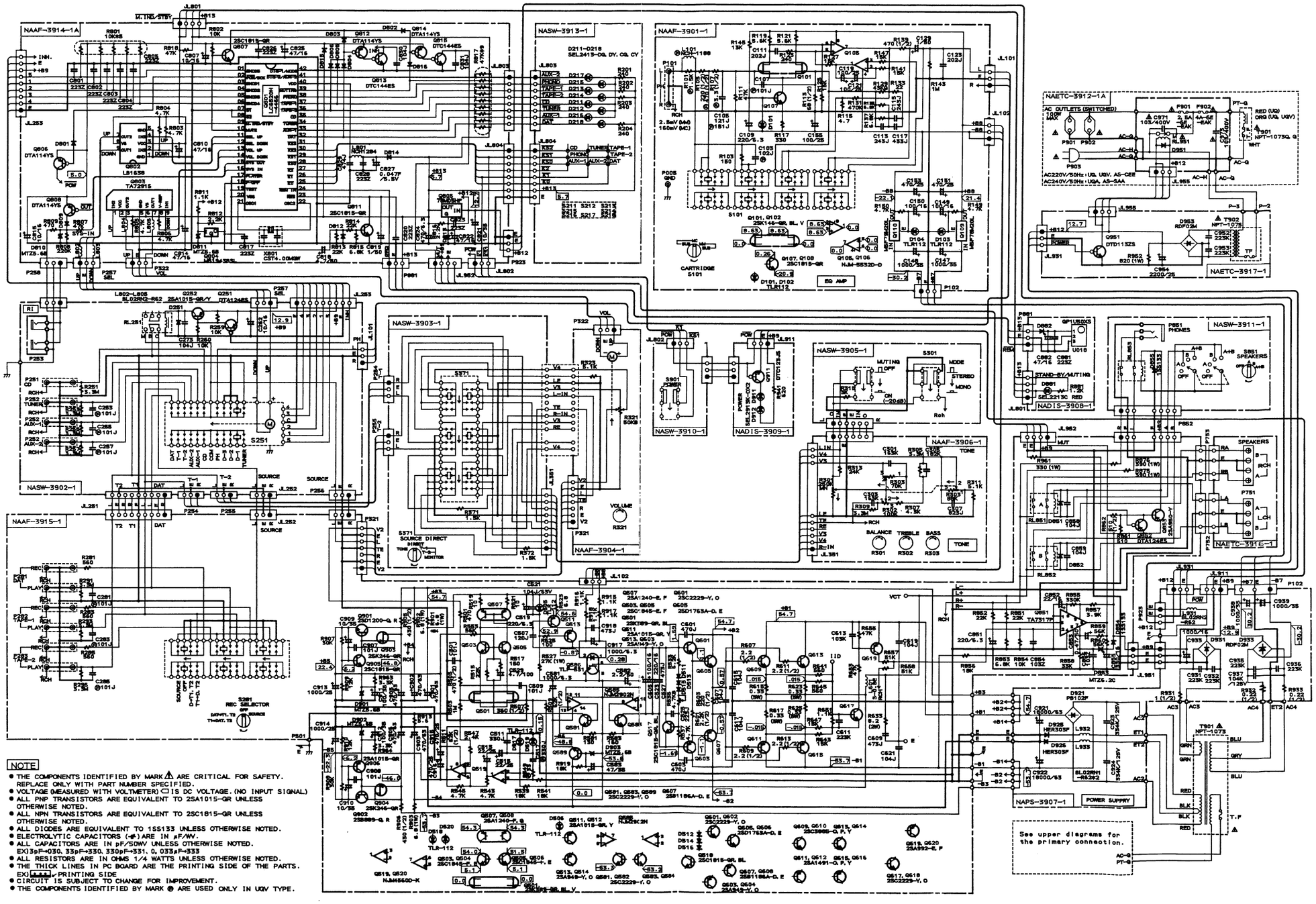


SCHEMATIC DIAGRAM
MODEL A-8780



NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ☐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (◉) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX) 3pF→030, 33pF→330, 330pF→331, 0.033μF→333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) ▬▬ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.
- THE COMPONENTS IDENTIFIED BY MARK ⊛ ARE USED ONLY IN UGV TYPE.

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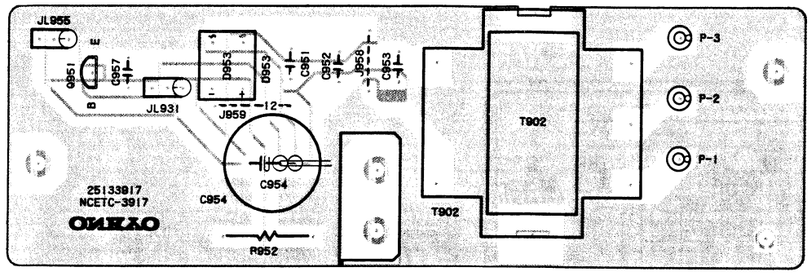
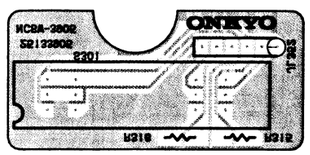
NAETC-3917



NASW-3905



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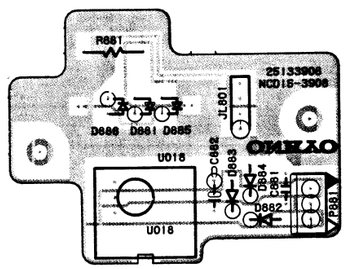

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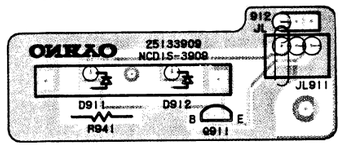

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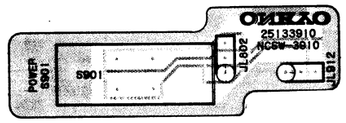

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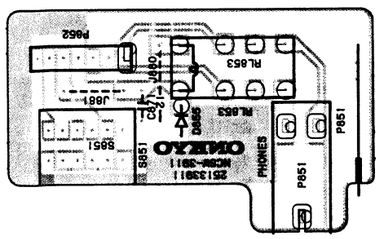

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